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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/759,846	01/12/2001	Vijay G. Subramanian	CE08690R	1848

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EXAMINER

KADING, JOSHUA A

ART UNIT	PAPER NUMBER
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2661

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/759,846

Applicant(s)

SUBRAMANIAN ET AL.

Examiner

Joshua Kading

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 14 is/are rejected.
- 7) ☒ Claim(s) 12, 13 and 15-20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2, 3.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Claim Objections

Claims 1, 4, 5, and 9 are objected to because of the following informalities:

Claim 1, line 7 states "the transmit power level". There is no antecedent basis for
5 this and it is believed that applicant means "the nominal power level". Therefore, this
should be changed to --the nominal power level--.

Claim 4, lines 2-3; and claim 5, lines 1-2 state, "current gain, current interference
channel gain". Since the word "current" can be confused with the measured flow of
electricity, it is suggested that claim 4, lines 2-3 be changed to --a present gain, a
10 present interference channel gain--; and claim 5, lines 1-2 be changed to --the present
gain, the present interference channel gain--.

Claim 9, lines 2-3 states "to be used each of". This is incomplete and should be
changed to --to be used by each of--.

Appropriate correction is required.

15

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

20 The specification shall contain a written description of the invention, and of the manner and process of
making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 10 and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to
comply with the enablement requirement. The claim(s) contains subject matter which
25 was not described in the specification in such a way as to enable one skilled in the art to

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which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 10 states "wherein step c) comprises the steps of updating the nominal
5 power level and determining whether convergence has been achieved; wherein if
convergence has not been achieved, repeating steps b)-d)." In figure 2, it is believed
that step d) corresponds to element 214 and that element 212 is the final decision point
of step c). As can be seen from figure 2, there is never a repeating of step d) from step
c). How can step c) repeat step d) if step d) has not been executed? That is to say, the
10 steps follow a logical order of a), b), c), and then d). If step c) is before step d), how can
step c) contain the further step of repeating step d)?

Claim 11, states "wherein if convergence has been achieved, using values
determined in steps a)-d) to determine a tentative transmission schedule for each of the
15 plurality of mobile stations in the system." As with claim 10, if element 214 of figure 2 is
taken to be step d), and step d) is not included in the repeating process of element 212
(step c), how can the values of step d) be used in step c)?

The following is a quotation of the second paragraph of 35 U.S.C. 112:

20

The specification shall conclude with one or more claims particularly pointing out and distinctly
claiming the subject matter which the applicant regards as his invention.

Claims 3-9 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5 Claim 3, lines 4-5 states "coding scheme and/or spreading factor..." The term "and/or" renders the claim indefinite because it does not distinguish between whether the claim discloses a "coding scheme AND spreading factor..." or if it discloses a "coding scheme OR spreading factor..." These are two different and distinct possibilities with different implications; therefore the claim is vague and indefinite.

10

Claims 4-9 are also rejected because they depend on claim 3.

 Claim 14, lines 2-3 states "a data rate/link adaptation algorithm". The term "rate/link" renders the claim indefinite because it does not distinguish between whether
15 the claim discloses a "a data rate adaptation algorithm" or if it discloses a "a data link adaptation algorithm". These are two different and distinct possibilities with different implications; therefore the claim is vague and indefinite.

Claim Rejections - 35 USC § 102

20 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5 Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by
Chen et al. (U.S. Patent 5,923,650).

 Regarding claim 1, Chen discloses "in a communications system comprising a
plurality of cells, each cell having a base station and a plurality of mobile stations, a
10 method of scheduling packet transmission comprising:

 a) determining a nominal power level for all base stations in the system (col. 9,
lines 58-59);

 b) determining an average effective data rate for all mobile stations in the system
(col. 9, lines 53-55);

15 c) using the transmit power level and average effective data rate to determine a
tentative transmission schedule for each of the plurality of mobile stations in the system
(col. 9, lines 43-65); and

 d) modifying the tentative transmission schedule using current radio conditions in
a particular cell to determine an actual transmission schedule for each mobile station in
20 the particular cell (col. 10, lines 4-5)."

 Regarding claim 2, Chen discloses "the method of claim 1 wherein step a)
comprises the steps of initializing the transmit power level to a predetermine value and
using the predetermined value to determine the nominal power level for all base stations
25 in the system (col. 10, lines 20-27)."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

5 (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
10

Claims 3, 6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. in view of Ejzak et al. (U.S. Patent 6,069,883).

15 Regarding claim 3, Chen discloses "method of claim 2 wherein step b) comprises the steps of:

 i) approximating a signal to interference plus noise ratio (SINR) for each of the plurality of mobile stations in the system (col. 9, lines 52-53 where $E_b/(N_o+I_o)$ is defined in col. 2, lines 49-50);

20 ii) using the SINR to determine a modulation and coding scheme [or] spreading factor and effective data rate for each of the plurality of mobile stations in the system (col. 10, lines 66-67 and col. 11, lines 1-11 where the R is the data rate and the W is the spreading factor)..."

 However, Chen lacks what Ejzak discloses, that is "... iii) using the effective data
25 rate to determine the average effective data rate for all mobile stations in the system (col. 11, lines 40-41, it is pointed out that although the calculation of the average is not

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defined, it is known in the art that an average is the sum of values in the set divided by the number of values in that set, in Ejzak the set is the mean load; it is noted that the load is directly proportional to the data rate)."

The point is that although the mean load is calculated and not the average data
5 rate, it would have been obvious to one with ordinary skill in the art at the time of invention to average the data rates like the mean load for the purpose of getting a bigger picture of how the system is functioning, i.e. it allows the characteristics of the system over a long period of time (or larger number of data rates) to be viewed as one "summary" value. The motivation being that looking at an averaged value shows if the
10 system is operating effectively or not over the "big picture".

Regarding claim 6, Chen and Ejzak disclose the method of claim 3. However, Ejzak lacks what Chen further discloses, that is "the step of approximating the SINR comprises obtaining the SINR from a measurement report (col. 2, lines 47-51 where the
15 "energy-per-bit-to-noise-plus-interference ratio" is the SINR and it is measured as stated, thus the measured value must be sent or stored in a message or report)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the SINR in a measurement report for the purpose of communicating the SINR to the appropriate entity. The motivation is that communicating the measured SINR
20 value allows the system to maintain the signal quality at a constant level (Ejzak, col. 2, lines 47-51).

Regarding claim 9, Chen and Ejzak disclose the method of claim 3. However, Ejzak lacks what Chen further discloses, that is "step iii) further comprises using the average effective data rate to determine a planned fraction of frames to be used [by] each of the plurality of mobile stations in the system (col. 9, lines 43-65 and col. 6, lines 19-20 where it is known in the art the a CDMA system operates by scheduling planned fractions of the frames to each user of the system for communication)." It would have been obvious to one with ordinary skill in the art at the time of invention to determine a planned fraction of frames used by each user for the same reasons and motivation as in claim 3.

10

Allowable Subject Matter

Claims 12, 13, and 15-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Kading whose telephone number is (703) 305-0342. The examiner can normally be reached on M-F: 8:30AM-5PM.

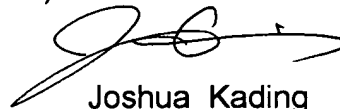
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Olms can be reached on (703) 305-4703. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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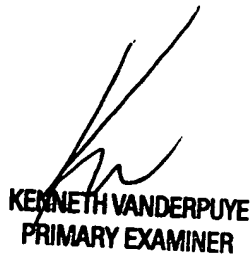
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

5 For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joshua Kading
Examiner
Art Unit 2661

10 May 12, 2004



KENNETH VANDERPUYE
PRIMARY EXAMINER